National Orange Company Packing House
(Anderson, Wetton, and Godfrey Packing House)
3604 Commerce Street
Riverside
Riverside County
California

HAER No. CA-121

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

Historic American Engineering Record
National Park Service
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HISTORIC AMERICAN ENGINEERING RECORD

NATIONAL ORANGE COMPANY PACKING HOUSE
(Anderson, Wotton, and Godfrey Packing House)

HAER No. CA-121

Location:	3604 Commerce Street, Riverside, Riverside County, California
Date of Construction:	1898, 1905, 1928
Type of Structure:	wood-frame, single-story factory
Use:	citrus processing, packing and shipping
Designer/Engineer:	L.C. Waldman
Fabricator/ Builder:	L.C. Waldman
Significance:	Originally constructed in 1898, the National Orange Company Packing House is the oldest continuously operated packing house in Riverside. While other establishments have moved towards increased mechanization in the processing of the fruit, the National Orange Company continues to utilize vintage 1920s and 1930s machinery, relying on historically established means of preparing, packaging and shipping citrus products.
Project Information:	Documentation of the National Orange Company Packing House was completed by the Historic American Engineering Record (HAER), administered by the National Park Service, Department of the Interior, as part of the California Citrus Heritage Recording Project undertaken during summer 1991. For more information on this project and related reports, refer to HAER No. CA-118 (California Citrus Heritage Recording Project, Riverside, Riverside County, California). Christopher Foord, HAER Historian, 1991 Kevin B. Hallaran, HAER Historian, 1991 Christine L. Madrid, HAER Historian, 1993

HISTORY

The National Orange Company Packing House (formerly the Anderson, Wotton, and Godfrey Packing House) is located at 3604 Commerce Street (formerly Pachappa Avenue) at the corner of Sixth Street in the City and County of Riverside, California. Built in 1898, it is probably the oldest citrus packing house in the city; it is without doubt the oldest continuously operated packing house in Riverside, having been in use without interuption under various managements since its construction. Additions to the original wood frame structure were made in 1905 or 1906 and 1928. Further modifications were made in 1985. The packing house sits on Lots 1, 2, 27, 28, 29, 30, and 31 in Block 8 of White's Addition to the City of Riverside, first laid out by Albert S. White in May 1886.[1] White's Addition was directly east of the historic Mile Square center of the city and eventually became the heart of the packing house district.

On May 9, 1898, the fruit packing and shipping firm of Anderson, Wotton, and Godfrey, a corporation duly formed under the laws of the State of California, purchased from Albert S. White Lots 1, 2, 27, and 28, 8lock 8 of White's Addition to the City of Riverside for the sum of one dollar. The price of the lots suggest there was more than a simple real estate purchase taking place, the nature of which is not presently known; more simply it could have represented a good faith offering until the buyers found more secure financing. Partners in the purchase were Charles F. Anderson, R. W. A. Godfrey, Frank E. Godfrey (presumed to be R. W. A.'s son), Henry Wotton, and Isaac Dean.[2] Anderson, a native of Brooklyn, New York, was described in the 1898 city directory as a "fruit shipper." R. W. A. Godfrey had been a banker in England before relocating to Riverside where he eventually owned citrus orchards in the area of Massachusetts and lowa avenues. Frank Godfrey was described as "mgr., packing house" in the same city directory as Anderson. All three resided in Riverside.[3] Apparently, Wotton and Dean were absentee shareholders in the packing firm. Neither man was listed among several years worth of various city directories. In 1902, when the lots were transferred to the Orange Grower's 8ank of Riverside, Wotton and Dean were both residents of London, England. Thus, from this information, it is presumed that Wotton and Dean were probably absentee owners.[4] Why Dean was left out of the firm's name is not known.

Five months after the purchase of the lots in 8lock 8, the Riverside Daily Press announced on October 1:

> The fruit packing firm of Anderson, Wooten [sic], & Godfrey are preparing to build a large packing house on Sixth street to cost $4500. The plans were drawn by L. C. Waldman, who has the contract for construction of the building.[5]

Precisely how long Anderson, Wotton, and Godfrey had been operating as fruit packers is not known, though it was probably for no longer than a year or so. Earlier in the same year the company was listed in the 1898 Riverside City Directory as "fruit shippers" operating out of an address on the corner of Ninth Street and Pachappa Avenue, three blocks south of the new structure.[6] The building was probably leased by the firm for the 1897 packing season; the same building was occupied in late 1898 by Frank 8rooks, a dried fruit dealer.[7] Anderson, Wotton, and Godfrey were not among the packing houses listed in available city directories prior to 1898.

Contracted to design and build the packing house was L. C. Waldman, a local Riverside builder and contractor operating out of his residence on E. 8laine Street at the foot of 8ox Springs Mountain in 1898.[8] Waldman apparently had some familiarity and experience with such buildings. The same Daily Press article announcing the proposed construction of the Anderson, Wotton, and Godfrey Packing

House noted that Waldman was putting the final touches on a Highgrove packing house owned by Colonel R. A. Eddy; the Eddy house was "pronounced a model of its kind."[9]

Construction of the Anderson, Wotton, and Godfrey Packing House took place between October and November 1898. By December 1, it was nearly complete, requiring only the application of the final coat of paint. The first fruit had been delivered to the house the day before, and packing and shipping were anticipated to take place the evening of December 1.[10] The company's first shipment went out on December 2 or 3, 1898, or possibly the evening of December 1. On December 5, 1898, the Riverside Daily Press wrote:

> Anderson, Wooten [sic], and Godfrey are settled nicely in their commodious new packing house on the corner of Sixth street and Pachappa avenue. The firm got off four carloads of oranges Saturday [December 3].[11]

The following day the paper added:

> [they] have a big force at work in their fine new packing house. They shipped the first car of fruit last Friday [December 2], and since then have forwarded thirteen cars. They think they will get out twenty-five or thirty cars all told for the holiday trade.[12]

The company marketed its fruit under the "Perfection" and "Golden Rod" brands.

Anderson, Wotton, and Godfrey apparently began having problems almost immediately. On January 23, 1899, less than two months after the opening of the packing house, Charles Anderson was dead of "consumption," or tuberculosis. Anderson, age 31 at the time of his death, had arrived in Riverside approximately ten years earlier, probably drawn, as were countless other consumptives before and after him, by the Southern California climate. That he was well-respected in the community was indicated by the multi-paragraph length obituaries that appeared in the two Riverside daily papers, both of whose normal death announcements were usually confined to a mere two lines.[13] His activities in the management and running of the packing house, opening as close as it did to his death, were no doubt limited because of his illness; from January 1 until his death he was under the care of Dr. W. B. Sawyer, a local physician.[14]

Taxes on the property, valued at $3800, were assessed in November 1899 at $38.[15] However, the assessment, along with a five percent penalty and an advertising fee, were not paid until March 1900. The advertising fee may have been for publishing a public notice of delinquency, though neither the corporate name nor those of its officers and stockholders appeared in the Riverside Daily Press' list of delinquent taxpayers for 1899.[16]

On February 16, 1900, a month before the taxes were finally paid, the corporation, with R. W. A. Godfrey as acting president and H. J. Doolittle as secretary, conveyed title to the lots and "appurtenances" to the Orange Growers' Bank of Riverside for the sum of $6,250.[17] (This indenture was not filed with the county recorder until December 1, nearly ten months later.) This was apparently an outright sale of the property, though what, if any, interest the bank would have in owning and operating a packing house is not fully understood. It may be that the corporation was saddled with more financial obligations than the $38 tax assessment suggests, and rather than engaging in prolonged arguments with creditors opted to simply divest itself by selling out. The bank, as implied by its name, no doubt catered to the citrus growing community and may have taken on the burden of the packing house for cash, sure in the knowledge that it would be able to turn it over in a relatively short time.

A second, more formal conveyance between the corporation and the Orange Grower's Bank occurred more than a year later on November 21, 1902. This second transfer, in which no money was explicitly stated to have changed hands, was agreed to by all of the company's principal shareholders: Henry and Annie Wotton; Isaac and Caroline Weipert Dean; Henrietta Anderson (beneficiary of Charles F.); R. W. A., Adelaide, and Frank E. Godfrey.[18] This second instrument is probably a corrective deed, though what precipitated the correction is not known (unless the untimely death of Charles Anderson and the settlement of his estate were responsible for the change).

The firm of Anderson, Wotton, and Godfrey continued packing and shipping fruit on into 1901, possibly under a lease arrangement with the bank after the February 1900 conveyance. After 1901 they cease to be listed in the city directories of Riverside.[19]

The Orange Growers' Bank did not divest itself of the packing house property until June 17, 1903, when it was sold for $6,450 to the Rubidoux Fruit Company.[20] However, as early as 1902, the Rubidoux Fruit Company was already operating the packing house under its name.[21]

Rubidoux's entry into the packing house industry at this date prior to the actual transfer of the property to the Orange Growers' Bank by Anderson, Wotton, and Godfrey appears to represent some sort of management or lease agreement between Rubidoux Fruit and either Anderson, Wotton, and Godfrey, or the bank. (R. W. A. Godfrey was still listed as a "fruit shipper" in the 1902 city directory and may have retained or obtained an interest in the packing house under the new management.[22])

The conveyance of the packing house property to the Rubidoux Fruit Company represented the first of a flurry of such activity during the month of June 1903. Eight days after the company purchased the packing house, it sold its corporate interest in the property to F. J. Delano. Delano, in turn, sold out within 24 hours to the quartet of E. J. Oatman, L. V. W. Brown, E. M. Hills, and F. E. Abbott. All three transactions involved the purchase price of $6,450; curiously, none of the deeds were recorded until January 3, 1904, all within the space of a few minutes.[23]

In January 1905, interest in the packing house began to be consolidated under one name--Frank Abbott. Oatman and his wife Louise were the first to sell their share on January 21. The indenture describing this transfer included the existing lots (1, 2, 27, and 28) plus the additional adjoining lots 29, 30, and 31.[24] This was followed by Abbott's purchase of the Brown and Hills portions, collectively in one deed, on September 26 of the same year.[25] Both transactions involved the payment by Abbott of ten dollars to the Oatmans and a like amount to Brown, Hills, and their wives, for a grand total of twenty dollars. Whether the corporate relations between Abbott, Brown, Hills, and Oatman continued after the consolidation of the packing house under Abbott's name is unclear, though Brown and Abbott are both shown as officers on company letterhead through September 1906.[26] The packing house did continue to operate as the Rubidoux Fruit Company until 1907.

At some time between 1902 and 1906, the false front facade of the building was painted with a sign designating the property as the "Rubidoux Fruit Company" packing house. The sign appears clearly in a photograph published in 1906 in Souvenir Edition--Riverside Fire Department. This photograph is the only known historical view of the packing house during its early period. Whether or not Anderson, Wotton, and Godfrey displayed their corporate name on the building is not known, though it would seem likely that they did.

In July 1906, ownership of the packing house was legally concentrated under Abbott's name. Letterhead for the Rubidoux Fruit Company from August 1906 continued to list Abbott as the company's secretary, with Hugh A. Bain as president and L. V. W. Brown as vice-president.[27] Nevertheless, near the end of July 1906, Abbott approached the National Orange Company with an

offer to sell the packing house for $10,000. The National Orange Company Board of Directors immediately agreed to the purchase.[28] Negotiations were completed with the sale of the lots and packing house to the National Orenge Company on October 10, 1907 for $10,000. The transaction was recorded two days later.[29]

The National Orange Company had been incorporated under the laws of the State of California on October 5, 1901.[30] Its principal partner and president wes Ethan Allen Chase, a native of Maine who had attained considerable wealth in the nursery business there prior to moving to California. Other members of the founding board were S. H. Herrick, vice-president, M. J. Daniels, treasurer, E. S. Moulton, secretary, Harry B. Chase, R. B. Shelden, and one of the original owners of the packing house, R. W. A. Godfrey.[31]

Stephen H. Herrick, vice-president of National Orange Compeny end founder of the Orange Grower's Bank, had arrived in Riverside around 1886. At the time of the company's incorporation he was also president of the East Riverside Land Company and the Riverside Highland Water Company, as well as a member of the board of the East Riverside Water Company. M. J. Daniels, treasurer, was president of the Orange Growers' Bank. E. S. Moulton, secretary, was also one of the principals in the packing and shipping firm of Moulton and Greene. R. W. A. Godfrey, apart from his long involvement with the packing house under discussion, had arrived in Riverside around 1891 from London, England where he had been a benker. Harry Chase was the son of Ethan Allen Chase.[32]

Ethan Allen Chase had first come to Riverside as e tourist in February 1891. The day after his arrival, he was accosted in his room at the Arlington Hotel by a real estate salesman named Dinsmore. Chase recalled in his autobiography, "I did not throw him downstairs as, at first, I inclined to do; but I told him frankly he could sell me nothing . . ." Chase was eventually persuaded to take a guided tour of the city with Dinsmore who "talked oranges and Riverside continuously."[33]

The following day Chese wes egain subjected, elbeit e little more willingly, to yet more of the 'hard sell' technique. This time a tour of Riverside's famous citrus groves was arranged and guided by Dinsmore's partner, H. W. Bordwell, whom Chase described as "a more crafty and plausible salesman" than was Dinsmore.[34] Dinsmore's and Bordwell's persistence and craftiness gave Chase pause to consider what he had seen:

> I thought the matter over. I saw much in work here that greatly appealed to me. A day or two later I found myself minus five thousand dollars in cash and in lieu thereof ten acres of naked land, suffering to produce something. I next bought a hundred thousand orange seedlings for seventeen hundred dollars and hired a man to prepare the lend, plant and care for them that season.[35]

In November 1891, the Chese family returned to settle permanently in Riverside. Ethan Chase immediately inspected his newly-planted grove of seedlings begun the previous spring. He then purchased ten more acres of yeerling seedlings from a Mr. Shoemaker. This grove was located at the corner of Pennsylvania and Chicago avenues. Forty more acres on Palmyrita Avenue were purchased for the raising of nursery stock, on which 200,000 orange seedlings were soon planted.[36]

The goals of the newly-incorporated National Orange Company, according to the company prospectus published about the time of incorporation, were stated as such:

> To consolidate under one management orchards located in the frostless portions of the Riverside foot-hills;

> To purchase orange land which has been thoroughly tested by time;
>
> To manage these holdings efficiently and economically;
>
> To place on the market, in a manner only possible to a large Corporation, the fruit grown only on the lands of the Company, the finest grade of oranges that can be produced; under a brand that shall be recognized as a guarantee of the uniform high quality of the fruit;
>
> And to realize for the stockholders of the Company the largest possible returns for their investment.[37]

Capital stock in the company was valued et $800,000, comprised of 8000 shares priced at $100 eech.[38]

The prospectus went on to emphasize that the company was:

> not an orange company in the usually accepted sense of the term. It does not propose to engage in the buying and shipping of oranges. It proposes simply to buy orange land and market the fruit grown upon its own property. Its Directors are not 'promoters' of a money-making scheme, nor are they indulging in a speculative proposition. They are co-operating in a method of handling fruit and lands, which they believe will be beneficial to all interested, and in which they invite a limited amount of outside capital to engage, in order that the holdings of the Corporation may be increased and the Company thereby strengthened . . . The Stockholders of the National Orange Company consist of those who have sold their groves to the Company at the present market value, and who have taken stock in the Company as payment; and those who have paid cash for stock in the Company.[39]

The cash obtained in this manner enabled the company to invest in still more orchard lands. In November 1901, the board took its first action in consolidating the individual members' groves under the National Orange Company banner. It euthorized the purchase of various citrus producing areas owned by the board members themselves. Each member wes given the option of taking a cash settlement or stock in the company, most of whom opted for stock in the company.[40]

At the time of the company's incorporation there apparently were no pressing plans to construct and/or operate its own packing house. In November 1901 the board contracted with the Moulton and Greene pecking house to pack the company's fruit for the coming season at the rate of 38 cents per box.[41] (Moulton, it will be remembered, was also a member of the National Orange Company board of directors, as well as e vice-president.) From 1901 to 1904 this practice (or a variation of it) of contracting for fruit packing was apparently the norm.

At the September 30, 1905, meeting of the boerd it was decided the company would pack its own fruit during the coming season. Still without a packing house to call its own, arrangements were made to rent one.[42] It is not known which house the company contracted to rent, though speculatively it might have been the Rubidoux Fruit Company packing house. By this time, ownership of the packing house wes consolidated under F. E. Abbott. Abbott, hed he rented the house to the National Orenge Company for the 1905-06 season, would have later been in a position to know first-hand whether National intended to purchase or construct its own packing facility and what the company might be willing to pay for an existing one. With the 1905-06 packing season behind, Abbott made his overtures of sale to National just at a time when the company would have begun considering its plans for the season ahead.

Ethan Allen Chase died on October 9, 1921. Under his leadership the National Orange Company eventually owned and operated packing houses not only in Riverside, but also in the nearby citrus producing communities of Grand Terrace and Corona. Hundreds of acres (738.5 acres valued at $475,588.25 in 1923) of citrus orchards grew under the corporation's banner.[43] The Chase family controlled, between personal and proxy shares, the majority of the corporation's voting stock; in November 1919 this amounted to 6,096 shares spread among family members Ethan, Augusta, Mary, Frank, Edna K., Harry B., and the Chase Nursery Company (shares for which Harry Chase held the proxies).[44] During the Chase family's tenure of ownership, the packing houses were exclusively devoted to the packing and shipping of fruit originating in the National Orange Company's groves, those purchased for cash or stock from its original shareholders, as well as those from subsequent shareholders.[45]

The Pachappa Street packing house was the jewel in the National Orange Company's crown: the house and its equipment were valued by the corporation at $17,000 in 1923. The Grand Terrace packing house, by comparison, was valued at just $2,400. Indeed, the entire valuation of the Grand Terrace operation, including the packing house and equipment, barns and sheds, land, water, and worker's dwellings, amounted to less than a quarter (i.e., $4,000) of the Pachappa Street property.[46]

On January 26, 1927, the Chases, under the corporate umbrella of the Chase Nursery Company, entered into an agreement with Oscar Crowell to sell the 8,000 shares of corporate stock in the National Orange Company.[47] The agreement between Crowell and the Chase Nursery Company stated that Crowell agreed to pay $105 per share for the 8,000 shares of capital stock. The agreement went on to stipulate a payment schedule, stating that if payments were not made as specified the Chase Nursery Company had the right to withdraw the shares from escrow. In such an event, Crowell would forfeit any amounts paid by him. Crowell would also not be able to acquire "right, title or interest in or to said shares" until such time as final payment was made.[48] One year later, on January 18, 1928, the Chase Nursery Company "assigned the said agreement . . . to J. S. Edwards," who then became owner of the property.[49]

With the completion of the Chase-Edwerds agreement on February 10, 1928, the board of directors of the National Orange Company, comprised of Mary, Frank and Harry Chase, F. T. Morrison and C. L. McFarland, all abruptly resigned. Upon their resigning, the board seats were immediately filled by J. S. Edwards, serving as president, and several members of the Cram family: Frank L., James E., W. H., and Henry. Apparently, Edwards and the Crams collectively held, either in hand or with options, all 8,000 shares of the company's stock, according to the minute book. What legal or financial agreements had been entered into between the Chases end the Edwards-Cram coalition are not known. Particulars were not addressed in the minutes of the board, nor has any other documentation been found. During a special meeting of the new board on February 17, 1928, Edwards and the Crams resolved to carry on the business of the National Orange Company "in the same manner as in the past."[50]

On March 20, 1928, Crowell entered into an agreement with H. A. Lynn and C. N. Funk, second parties, and Frank H. Harwood, B. A. Woodford, D. G. Arbuthnot, and Dana C. King, third parties, where he steted that he had "heretofore entered into a certain agreement with The Chase Nursery Company, a corporation, dated Jenuary 26, 1927, to purchase up to 8,000 shares of the capital stock of the National Orange Compeny, a corporation, being all the shares of said corporation . . ."[51] According to the document, the 8,000 shares of National Orange Company stock were still held in escrow at the Citizens National Bank of Riverside. This is contrary to the information in the board minutes of February 16, 1928, which stated that Edwards and the Crams "collectively, owned all of the stock of the company."[52]

What occurred over the next several months is unclear. Apparently, the conflicting agreements made between the Chases and the Edwards-Cram group and the Chases and Oscar Crowell created litigation, the precise nature of which has not been discovered. A letter dated November 20, 1928, between attorneys George Hellyer (presumably representing Edwards and the Crams) and C. L. McFarland (a former board member of National during the Chase tenure representing either the Chases or Crowell and Lynn et al.) questioned "when we expect to have the trial of the suit pertaining to the stock of the National Orange Company." Attorney Hellyer, with whom the letter originated continued:

> It is my understanding that it is the desire of yourself [McFarland] and your clients to try this litigation as early as possible so that if our claims be wrongful your clients will know that they have an absolute title end right to the stock and will then be free to dispose of it as they see fit. With this suit hanging over them I essume they will not be able to sell the property or the stock should they desire so to do. Our clients are likewise anxious to secure an early determination.[53]

J. S. Edwards and the Cram family were unable to hold onto the packing house for very long. It is difficult to know exactly what transpired in the following months, as the documentary record is woefully incomplete. Sadly, the minutes of the board of directors end abruptly on March 5, 1928 and do not begin again until August 16, 1928, five months later. Only one other letter between Hellyer and McFarland has been found which has any bearing. In that letter, dated April 25, 1929, the attorneys were still trying to agree on a trial date.[54]

Nevertheless, on August 16, 1928, when the board minutes resumed, Edwards and the Crams, as well as members of their staff, all resigned and were replaced. Whether this was a compromise decision until litigation was settled is not known. Nor is the outcome of that litigation, though it undoubtedly ended in favor of the members of the Crowell-Lynn-Funk-Harwood coalition who, along with their successors, would serve on the board of directors into the 1980s. J. S. Edwards was replaced es president by Frank H. Harwood; Frank Cram, vice president, was replaced by Cecil N. Funk; Opal Stowe, secretary, was repleced by Harvey A. Lynn. Other members of the board whose positions had been held by the Crams were replaced by B. A. Woodford and Dana King.[55]

The new board, retaining the name National Orange Company, immediately set about making improvements in the packing house. Oscar Crowell was appointed to the position of General Manager; Cecil Funk was named Packing House Manager. In September, Crowell contracted with the Fred S. Wilbur Pioneer Roofing Company for a new roof for the structure. The cost was $900. A tentative order was placed with the Parker Machine Works for e new Parker Box Making Machine costing $2800.[56]

Apparently, the Parker Box Making Machine and other equipment were purchased and installed between September and December 1928, for on December 7 Cecil Funk reported to the board es to the installation of the "new packing house equipment." At the same time he reported on the remodeling of the packing house. Two weeks later, on December 21, Funk again reported on pecking equipment installations as well as the instellation of electrical wiring. He further stated that fruit (navel oranges) was already being picked and hauled to the packing house preparatory to an anticipated opening date of December 26.[57]

Not until August 1929 was Funk able to fully report on the improvements that had taken place during the year.

> At the beginning [of August 1928] . . . the house was in e deplorable condition as relates to the working of the machinery and other equipment . . . At a meeting of the

> Board of Directors in October they decided to improve the inside of the packing house by installing new machinery. They installed two new sizers and made a third sizer out of the old one, and used this for our Standard grade. The other sizers were given over to handling Sunkist fruit. [National Orange Company, a proprietary firm since its inception, announced its entry into the Sunkist Growers, Inc. marketing co-op in October 1928.[58]] One new 8 run stamp machine was installed on each of these two sizers.
>
> The conveyors ell eround ell three sizers were rebuilt using such parts of the old conveyors es was practical to do so. The sorting teble was entirely rebuilt using nothing of the old tables. This present table is a combination one: part a roller sorting table and balance a belt sorting table. This table had only one place to be located due to the fact the dryer was already located end could not be moved, but after considerable figuring we were able to place it in the given place . . .
>
> The installation of a new box machine, a new lidder and a strapper was made at same time the house was being overhauled. After the installation of this new machinery it was evident that it should be protected from the rain, so the building was re-roofed.[59]

Apart from the above extensive renovations, Funk also noted that the house had been rewired, the building had been painted, and the company name had been painted, along with the Sunkist logo, on the false front on the west side of the building.

Improvements continued to be made to the packing house over the next several years. A new waxing machine from Citrus Machinery Corporation was installed in 1931. Flooding in the basement in 1935 forced the installation of barrier walls under east and west sides of the building. In 1936, Funk reported the cost of repairs to the roof would be $360 for shingles or $105 for tin. In August he was authorized to purchase a new soaking tank. Also in August, portions of the south firewall were patched and repaired due to cracking. In February 1937, a new frosted fruit separator was installed. Hardwood floors were constantly being repaired, refinished, or replaced.[60]

In September 1941, the board appointed a committee to "secure comprehensive bids for the replacement of such packing house machinery as might seem advisable." Funk reported a month later that bids from Food Machinery Corporation (FMC) and Brogdex Company had been received; Funk favored the FMC bid and the board concurred, authorizing him to go ahead with the purchase and installation of such machinery.[61]

The next fourteen yeers of the company's activities are not well-documented. Minutes of the board of directors, the most useful documentation in tracking the activities of the company, are missing for the period from January 1942 through November 1955. These are believed to have been damaged at some point by flooding of the basement vault and then discarded.

However, in November 1955, the National Orenge Company underwent a reorganization whereby its status was changed to that of a non-profit cooperative essocietion without capital stock. On November 2, the board of directors filed a notice of intent to wind up and dissolve the corporation with the California Secretary of State. The "Certificate of Winding Up and Dissolution" was certified by the State on November 29, 1955, and a copy was forwarded to the county recorder's office.[62]

The dissolution wes preceded on November 7 by the conveyance of all outstanding corporate shares, plus the corporation's real estate, including the packing house, to the board of directors, then Harvey A. Lynn, Reymond J. Arbuthnot, James B. Woodford, and Frederick P. Nusbickel. The transfer of the

stock and real estate was filed in a corporation grant deed with the county recorder on November 7, 1955.[63]

One month later, on December 5, 1955, with Lynn, Arbuthnot, and Woodford acting as the first directors, Articles of Incorporation for a new National Orange Company were filed with the California Secretary of State. The company was:

> organized and exists as a non-profit cooperative association without shares of stock . . . The primary purposes for which Company is formed are to prepare for market and to market (whether directly or through such facilities and agencies as the Board of Directors of Company shall determine) the citrus fruit produced by its members.
>
> As secondary or incidental to said primary purposes, Company may market other agricultural products and may provide either or both supplies and services required for the production, or preparation for market, or marketing, of citrus and other agricultural products.[64]

Members of the new cooperative association probably consisted of the former shareholders of the old National Orange Company. The establishment of a "Company Revolving Fund" within the new articles of incorporation provided for the membership of growers and others:

> There shall be credited to and deemed to have been placed in said revolving fund all amounts contributed by or collected from the members for the revolving fund, whether, upon admission to membership, or subsequently, and whether contributed in money, or other property, and if in other property, the amount contributed shall be deemed the fair market value of such property as determined by the Board of Directors. A member shall take and have a credit in said revolving fund for the amounts contributed by him . . .
>
> The property rights and interests of the members shall be unequal. The property rights and interests of any member at any time shall be such part of the entire property rights and interests as the amount of the revolving fund credits standing upon the books of the Company in the name of such member at the time bears to the aggregate of the revolving fund credits standing upon the books of the Company in the names of all the members at such time.[65]

At least for the growers, the changeover to non-profit status by the company probably had little effect on them. Though not explicitly stated, the stockholders shares, when turned over to the board, were probably essentially translated into credits in the new company's "revolving fund," thereby causing the least amount of confusion during the transition, just when most growers were preparing for the navel harvest.

On December 13, Lynn, Arbuthnot, and Woodford, acting as trustees for the former shareholders of the old National Orange Company, quitclaimed the real estate holdings of that company, the packing house included, to the new National Orange Company.[66]

Harvey Lynn served as president of National Orange until his retirement in 1976. He had been born in Trumbell County, Ohio in 1883. His business life began with a two year stint at a business school and later as a stenographer-clerk for the Erie Railroad. In 1907, with $50 in borrowed money, he moved to California. He found work, again as a stenographer, with the California Fruit Growers Exchange [now Sunkist Growers, Inc.]; the position paid $1,000 per year. In 1914 he moved to

Riverside to manage the Arlington Heights Fruit Exchange. Later, in 1948, he became its president and remained so until 1976. From 1914 to 1948 he served as manager of the Riverside Sunkist office. In 1921 he was elected to Sunkist's Board of Directors, and served as its president from 1950 to 1965. Lynn died at age 95 in March 1979.[67]

On August 1, 1983, Howard G. Hall and Robert L. Renfro, president and secretary-treasurer respectively, of the National Orange Company sold the lots and packing house to Thomas L. and Barbara S. Mazzetti.[68] A trust deed in the amount of $300,000 was filed with the county recorder on the same day. The Mazzettis were described as the trustors, John J. Pearce Escrows, Inc., as the trustee, and the National Orange Company as the beneficiary.[69] Both documents were filed on August 5, 1983 with the county recorder.

The only major change in the building's design since the Mazzetti purchase has been the construction of a recessed concrete bay to accommodate forklift traffic from the exterior to the box dump machine. This was installed about 1985.[70]

Today the packing house still relies on machinery dating from the 1920s to the 1950s in an age where more modern packing house operations have come to rely on computerization. To compete with these larger, more technically advanced houses, National Orange Company packs fruit (including navel and valencia oranges and grapefruit) from areas as far away as Tulare County in the San Joaquin Valley to the north. Virtually all of the fruit is shipped in and out of the house via semi-truck and trailer.

TECHNOLOGY AND TECHNICAL ASPECTS OF THE NATIONAL ORANGE COMPANY PACKING HOUSE

The Evolution of Citrus Packing

When the citrus industry in California was in its infancy, much of the packing of fruit was carried out in the groves themselves and the fresh produce sold in local markets. Very little of the complex washing, waxing and sizing processes that characterize the industry today took place. Later, however, as markets for the fruit grew following the development of the refrigerated railcar by Swift and Armour in the early 1880s,[71] the citrus industry expanded and more mechanization of the packing process was needed. With mechanization came the concentration of packing into buildings. These were typically located along railway lines for easy shipment of the fruit to east coast markets. The first packing house in Riverside was built in 1881[72], and, at the height of the industry, over 200 packing houses lined the arterial routes of the Sante Fe and Southern Pacific railroads.

In the early days of the citrus industry in Riverside, the orange grower handled all his own fruit from the tree to the railroad. Packing was carried out in the groves by Chinese laborers who graded and sized the fruit by eye.[73] The fruit was then roughly packed into barrels for shipment. In Riverside this meant taking the fruit to Colton, the nearest point on the railroad[74] for Riverside did not obtain its own line until 1885[75].

The first packing houses were built in Riverside in the early 1880s. These early packing houses were wood-framed, single-story structures with pitched roofs. They were generally raised up above ground level but without a basement. A loading dock with a canopy provided access to the building for the loaded wagons from the groves. Light and ventilation was provided by sash windows in the side walls, skylights and sometimes louvered vents in the roof. These rectangular buildings generally had dimensions of approximately 100 X 100 feet, which could easily accommodate the primitive machinery. These "first generation" packing houses[76] were built until 1907, when technological, structural and managerial changes in the industry made them obsolete.

Initially, the packing houses utilized many of the hand-packing techniques that were carried out in the groves, with the fruit being very loosely packed in barrels (and later boxes). Primitive sizers were used, but these consisted of merely different size holes cut into a board through which the fruit was passed. No attempt was made to wash the fruit and packers graded the fruit as they packed. The boxes were nailed in the center as well as at both ends, which did not allow for a high pack. Once packed the fruit was taken by horse drawn dray to the railhead where it was loaded into box cars (without refrigeration).[77] But as the markets for California citrus continued to grow, more efficient methods of handling were required not only to pack the fruit, but also to enhance its quality and appearance. Thus the technology of packing developed and the real mechanization of the industry began.

At first the machinery for washing and packing fruit was crude and basic, not becoming power driven until 1898[78]. At this time much of the moving of the fruit was done by hand using hand trucks. As the machines for specific processes developed (i.e., washing and sizing), so did the method of conveying the fruit. Gravity conveyors began to displace some of the hand trucking operations. Real flow production, however, only developed after 1898 with the development of powered machinery and conveyors.

The Shapers of Industry
The Wright Brothers
The Wright Brothers of Riverside were important innovators in the development of early citrus machinery. Benjamin Bakewell Wright and James Harrison Wright, like many others before and after, came to Southern California because of ill-health. Accompanied by their sisters, Martha and Euphemia, they arrived in Riverside from Allegheny, Pennsylvania in the early 1880s. Both brothers settled on Adams Street, near the present location of Highway 91, where they engaged in orange cultivation. Both brothers were listed variously as "farmers" and "horticulturists" in local directories.[79] Harrison, in defiance of the popular architectural tastes of the day, built his adobe home, dubbed appropriately, "El Adobe," in the traditional California style: a single story structure built around three sides of a central patio.[80]

It was in a building behind the "El Adobe" that the brothers operated a small manufacturing business specializing in citrus related machinery. It was also here that they made their "tangent fruit brushers"[81]. Developed over three years, the "tangent fruit brusher" made a great impact on the industry when it was introduced in 1898. This fruit brushing and washing machine was comprised of a wheel on which brushes were arranged so as to provide "flexible pressure on the fruit, adjusting themselves to the different sizes, and cleaning and polishing them without injuring the tender rinds"[82] Each piece of fruit was brushed separately by the action of the rotating wheel. These machines could be used for wet and dry brushing and many packing houses had one of each. The brusher could be operated by hand, treadle or by power[83]. It was a major labor-saving device which was rapidly adopted by the packing houses: "While nine months ago successful machine brushing was unheard of, now two-thirds of the pack of Riverside...is being machine polished."[84]

G. Harold Powell
Although the early machines increased the capacity of the packing houses, many had a detrimental impact on the fruit. Because of the crudity of the equipment at this time the fruit was roughly handled. This meant that the delicate protective peel would often be punctured, exposing the fruit to fungal spores. Thus, by the time the fruit reached its final market, a large proportion of the fruit would be rotten and had to be sent back. This cost both the fruit growers and packers additional monies. By the 1904-05 navel season the citrus industry in California was in a crisis. This crisis also concerned the Department of Agriculture, and in 1904 G. Harold Powell (an USDA pomologist) was sent to Southern California to investigate the problem.[85]

Powell spent three months investigating the citrus industry from the groves to the packing houses, becoming acquainted with all of the industry's major growers and packers. He was especially impressed by the scientific approach of the leading growers of Riverside. Powell arranged to make Riverside the base for his research, and returned to Riverside in the winter of 1905 for a further three-month stay in which he began a series of controlled tests into the causes of decay.

Much of Powell's work centered on the packing houses. It was here that he discovered the mechanical origin of the decay in packed oranges. One of the key locations where Powell undertook these experiments was the National Orange Company Pecking House at 3604 Pachappa Street (later renamed Commerce Street). The result of these experiments was a new way to pack and handle fruit. The "Powell method" advocated "handling fruit as delicately as eggs" and required a revolution in the way the industry was managed as well as the methods and technology of packing. Powell's structural reorganization of the industry was akin to the scientific management principles of Taylor.[86] Ownership had to be removed from the process of management by the creation of a professional class of managers with particular expertise. In this way capital was separated from the capitalist, thereby

providing the mechanism for the development of corporate capitalism, a process which had already become well established in many other industries.

The effect of the Powell method on the labor force was to creete e more skilled and specialized work force, one which needed to possess more "sophisticated handling skills," their work being "subjected to the intense scrutiny and constant supervision of scientific management."[87] The emphasis of the Powell method was on quality rather than quantity. Thus it was advocated that workers be paid by the day rather than on a piece rate basis. To obtain a high degree of quality the oranges were to be hendled with utmost care. This is illustrated by the handling methods of Cornelius E. Rumsey's new packing house in Riverside, built in 1908, which employed Powell's methods. It was here that "From tree to pack, the fruit were never jostled, or dropped onto a hard surface, or held or scraped by mechenical devices" [88]. This meant that rehandling, es well es all processing, was to be reduced to a minimum. Machines were eliminated and weshing wes only carried out, by hend, for the fruit that was not visually cleen.

The Powell method represented a revolution in the packing of fruit and in the structure of the industry. It elevated the citrus industry to the heights of a modern manufacturing enterprise, producing quality fruit for a mass market. In addition to providing the impetus for structural change in the industry, Powell further stimulated the development of more advanced technology. By rejecting the use of machines wherever feasible in the packing process, Powell encouraged the search for more sophisticated processes which would handle the fruit as gently as possible. These factors were instrumental in the move towards the "second generation" packing house[89] which occurred from 1907.

Stebler, Perker, end Pexton

Fred Stebler (1870-1957) and George D. Parker (1870-1931) were major innovators in the development of packing machinery which eventually led to the demise of the first generation packing house and the rise of the second generation packing house. These two men were both self-taught mechanical engineers who later dominated the packing machinery industry of not only Riverside but also the country. Initially fierce rivals, these men were constantly in litigation over patent disputes until they were finally brought together by W. B. Clancy, president of the Citizens National Bank, to form the Stebler-Parker Company in December 1920. The Stebler-Parker Company became part of the Food Machinery Corporation in 1929[90], and another Stebler and Parker rival, Hale Paxton, manufacturer of box-making machines, negotiated to join the combination in 1933.[91]

Stebler arrived in Riverside in 1899 and bought into a machine shop making fruit mechinery and packing house fittings. Irving Fay, his partner, was already involved in developing a fruit brushing machine to rival the Wright Brothers "Tangent Fruit Washer".[92] These ventures with his last partner, however, were unsuccessful. Stebler redesigned the brusher and successfully built and sold nine of them.[93] They did not prove popular with growers and in 1901 the model was abandoned. Nevertheless, by 1900 the firm of Fay and Stebler, housed in a new factory at 866 Vine Street, was the "Lergest manufacturing establishment of its kind on the Pacific coast."[94] Stebler went on to patent, in 1902, e fruit grader (Patent No. 990402), which was the first commercially successful power sizer.[95] In 1903 Stebler set up the Celifornie Iron Works with a new partner, Austin A. Gamble, after Fay dropped out due to ill health. Stebler finally bought Gamble out in 1909.[96]

Stebler went on to manufacture many other pieces of packing equipment, including sorters, washers, belts and handling systems, which he installed into packing houses as complete packing lines. His early patents included an automatic weighing machine (1905), a fruit cleaner (1909), hand trucks (1911), a fruit washing machine (1916) and an improved fruit separator which he patented with Frank F. Chase (one of the founders of the National Orange Company) on December 26 1916 (Patent No.

1,209,900).[97] The fruit separator was a device which separated frost damaged fruit from undamaged fruit by exploiting the differences in their specific gravity. The fruit was led into a tank of water in which there was a divider across the middle. Frosted fruit would float to the surface quickly and be caught by the divider. Undamaged fruit with a greater specific gravity would pass under the divider to be removed at the end of the tank and continue along the processing line. This improved fruit separator soon became a "standard item in California packing houses."[98]

Even after Stebler retired in 1937, he continued to contribute to the citrus machinery industry. In 1941 he patented his "silent water eliminator" (Patent No. 2267492), a machine consisting of brass rollers which, as the fruit passed over them, rotated, removing the free moisture from the surface of the fruit. The moisture collected on the rollers was removed by a scraper on the underside of each roller which acted like a squeegee. This machine replaced the earlier method of removing moisture in which the fruit was passed over a "towel absorber" in the form of an endless belt.

It was Stebler's power sizer, however, that brought the first generation packing house to maturity[99]. The sizer[100], patented in 1902 (No. 709,613) consisted of two endless conveyor ropes and two diverging cylinders or "tubes" which were inflated to prevent damage to the fruit. The fruit was propelled by the endless conveyors against the rotating tubes which imparted a rotary motion on the fruit to determine its smallest diameter. When the fruit reached a point where it was no longer supported by the conveyor and tube, it fell onto an incline plane which discharged it laterally from the machine. The idea of using rollers and ropes to size fruit was not new. As early as 1891, James T. Ish patented a "Fruit-Grading Machine" (No. 458,422) which used a single, tapered roller and an inclined belt. Stebler's sizer, however, was adjustable for different sized fruit. The sizer was improved by R. Strain who, in 1903, patented a "Fruit Grader" (No. 730,412) which had individually adjustable rollers. John H. Urquhart of Riverside further improved the design by using rollers with a cut-away portion at its center. This allowed the fruit to be sized at the center of the roll, rather than the end, giving a more even distribution of fruit as it fell into the bins below. Urquhart patented this "Fruit Separating or Assorting Machine" (No. 888,130) in 1908. Both these patents were assigned to Stebler, giving him control of the most advanced sizing machinery of the day.

Parker came to Riverside from Los Angeles in 1900 where he began developing box-making machines at the Stoner Iron Works at Twelfth and Commerce Streets. Box-making machines were not new as nailing machines had been used to make cigar boxes since the 1860s. These nailing machines operated by shaking nails into channels which guided the nails into place before they were pressed, rather than pounded, home.[101] Parkers development of these machines for the use of citrus box making, however, had a fundamental impact on the industry. Previous to the advent of box-making machines, boxes for citrus fruit were made by hand. The men who made them were the "aristocracy of migrant farm labor".[102] They were skilled workers who earned high wages on a piece rate basis. They developed a caste system whereby entrance to this lucrative job was open only to those of Anglo origin who possessed the required skill. At a time when scientific management principles were increasingly being applied to the citrus packing industry and production was rising rapidly (particularly with the introduction of power sizing), this closed shop arrangement was a hinderance to the move towards total flow production.

Parker's early box-making machine was not automatic; the operator had to turn the pieces of the box around so the machine could nail each side and the bottom. After the box was filled with fruit, it went to another nailing machine developed by Parker, the Box Lidder. Over the years the box-making machine was given more automatic features so that by 1931 "a single operator could turn out as many as 450 boxes per hour, faster than most packing houses could use them." [103]

In 1909, Parker had made enough money with his box-nailing machines to be able to buy the Stoner Iron Works, which he renamed the Parker Machine Works. After the success of his box-making machines, Parker went into direct competition with Stebler, buying the rights to the Wrights' washing machine patents and transferring the production to his own factory. He also started to manufacture sorting, sizing and other machinery, which brought him into conflict with Stebler, who claimed Parker was infringing on his patents.

Although very successful, Parker's box-nailing machines did not totally displace the hand box maker. This prize was taken by Hale Paxton (1899-1937), who at the age of 20 began making grape boxes under contract near Cajon Pass. He devised a simple box-making machine which he later developed into a light-weight version suitable for use in the field. Although not fully automatic like Parker's machine, it was able to drive two rows of nails at the same time and was far more versatile. Parker nicknamed Paxton's machine the "stitcher".[104]

Paxton came into conflict with Parker when he started making machines for citrus box making. This competition was not restricted to nailing machines. Paxton had developed a superior lidder to that of Parker, one which raised the box to the lid rather than banging the lid down onto the box, but it was forced off the market for a time by Parker's patents. The competition was further intensified when in 1933 Paxton moved his works to Santa Ana to concentrate on citrus machinery. Numerous court battles ensued between Paxton and the two heavy weights of the industry: Parker and Stebler.

The Parker sizer was to become a major innovation in the development of the citrus packing industry. Parker's "rope and roll" sizer was a much larger device than the earlier sizers and much faster in operation too. It operated by carrying fruit on an endless rope against a series of tapered rollers mounted on a single axle. The roller rotated to determine the smallest diameter of the fruit, which then fell out into bins where they were packed. The largest rollers were located where the fruit was fed into the sizer and diminished in size towards the end, so that the smallest fruit dropped out first and the largest last. This mechanical power driven sizer theoretically could size more fruit than the packers could pack[105] and by 1916 had displaced the Stebler sizer.[106] Parker improved his sizer in 1918 with "universal" adjustments, where the sizes of the fruit being sorted could be easily varied without having to change the rollers. This improvement further increased the machine's adoption and expanded the number of markets the fruit could be sold in. Packing houses were now able increase the number of specialist grades of fruit they packed.

THE IMPACT OF NEW MACHINERY ON THE PACKING HOUSE

The Parker sizer had a great impact on the citrus packing industry. The machine not only raised the volume but also the range of fruit packed. In addition, it increased the speed at which the packers worked and reduced costs of production, thereby making possible "a genuine assembly line in the packing house, bringing to the citrus industry the benefits of industrial mass production. Only fifteen years earlier, packing houses produced a few thousand boxes of fruit a year; with the Parker orange sizer, they could produce thousands of boxes e day."[107]

The Perker sizer's impact on the packing line was reflected in the packing houses themselves. Not only did the sizers require more space than any previous piece of equipment, they necessitated the rearrangement of machines around them. Their greater output demanded more of everything; boxes, box shook and storage space were increased. Installing a Parker sizer often entailed actual expansion of the packing house floor space and area. Thus, the Parker sizer could not be accommodated in the older, smaller houses without messive enlargement of the structure. Previously, packing houses had expanded incrementally; more sizers and packers could be added without difficulty. This method

changed with the arrival of the Parker sizer. New, larger buildings were needed and expansion could only take place in multiples of what Tobey & Wetherell called "Parker units"[108]. In this way the Parker sizer stimulated the shift from first to second generation packing houses by requiring new structural specifications and contemporary architectural design.

The archetypal second generation packing house, as described by Tobey and Wetherell,[109] was a rectangular, single-story shed with railroad siding running the length of one side of the building. The packing hall was raised above ground a few feet to railcar loading level. Beneath the building was a full basement, some 12 to 14 feet high, where fruit would be cooled and stored. The average size of the packing house was approximately 100' x 145'. The basement floor and walls were constructed of reinforced concrete in order to bear the weight of the machinery and fruit. For fire safety reasons the external walls of the packing house were often made of poured concrete or hollow tile. Typically the roof would be of a saw-tooth construction with its long exis oriented east-west so that only diffused north light would enter the building. The roof was supported by steel trusses, creating a large open space for the arrangement of the packing line. The rectangular form of the building facilitated expansion, and the side where expansion was designated would often be of frame construction.

The form of the second generation packing house as described above was dictated by the "functional specialization of space"[110] brought about by technological, structural and managerial developments. The space was primarily divided between storage and packing functions. The basement was always used for storage and occasionally utilized for cooling and coloring the fruit.[111] The ground floor of the building was domineted by machines used for the processes of sorting, grading, sizing and packing. Another main division of space occurred between the management and labor areas; the management offices were often located outside the packing hall in a compartment against an exterior wall. Pre-cooling, where the packed fruit was cooled down to the temperatures of the refrigerated railcars before shipment, required mechanical refrigeration. These pre-cooling units were most often housed separately in small buildings added next to the packing house.

The second generation packing house structurally relates to the form many new manufacturing plants were taking throughout the country during this period. It is similar to the innovative designs and use of materials (principally concrete and steel) initiated by Albert Kahn[112] to accommodate Henry Ford's production lines at his Highland Park (1909) and River Rouge (1917) plants in Michigan.

THE NATIONAL ORANGE COMPANY PACKING HOUSE

The packing house at 3604 Commerce Street, Riverside, was built in 1898, at a time when the industry was in expansion. Refrigerated transport of the fruit by railroad had begun and powered packing machinery was becoming commonplace. Built by L. C. Waldman for Anderson, Wotton and Godfrey ("growers, packers and shippers of California"),[113] the structure represented the most up to date packing house of its day. Installed at this time were three Wright Brothers Tangent Fruit Washers.[114] Over the years extensions were edded and new machinery installed so that by 1928, it could be considered a second generation packing house.

Structure--General

The packing house as it stands today is a single-story, four-bay, wood- framed structure, with a pitched, corrugated-iron roof. On the west side is a loading dock which is covered by an overhanging roof. The building is partially walled by wood siding and partially by corrugated iron. The structure is raised above ground level by wooden posts which rest on boards laid directly on the dirt. There are no foundations for the building, except for small sections supporting the brick firewall of the south

elevation and the west loading dock. Inside the northwest corner of the building are two offices and a concrete vault extending below floor level to a small basement.

Chronology
Phese 1.
The original 1898 structure consisted of what is essentially the northern section of the present packing house; a wood-framed, single-story, two- bay building, the floor raised above ground for railroad freight car loading. A loading dock ren along the north, west and south sides of the building with steps to the western dock. The roof wes covered with wood shake rather then the present corrugated metal and the canopy over the western loading dock was not supported by posts as it is today.

The first evidence of machinery in the 1898 packing house is found in the Riverside Press and Horticulturist, dated January 21, 1899. The article announces the arrival of the innovative "cleaning and polishing" machine[115] made by the Wright Brothers of Riverside, and goes on to state that "Anderson, Wotten [sic], & Godfrey have just put in a three wheel machine, the largest in use, and which has the capacity of five [railroad] cars a day. They pronounce [it] entirely satisfactory."

The number[116] of washing machines suggests that there must have been other machinery in the packing house to cope with the stated capacity of five cars a day. Although there is no direct evidence, the house probably had installed some form of mechanical sizer, and possibly some form of conveyor system, although at this time e great deal of the fruit continued to be hand trucked. The machinery could have been powered, as at this time "nearly all of the large establishments are fitted up with electric power plants for polishing, elevating and grading fruit."[117] There is, however, no mention of e motor on the tax rolls until 1906.[118] The large capacity of the packing house would also require substantial box making. At this date the boxes would be made by hand on jigs, for the Parker box nailer was not available until the late 1910s.

Phase 2.
The next stage in the development of the packing house occurred in 1905-06, when the fourth owner of the house, Frank E. Abbott, built a single-bay extension onto the eastern half of the south wall. This addition is visible on the 1908 Sanborn fire insurance map, which shows that a door opened onto the addition from the south wall of the 1898 structure.[119] From this evidence it can be presumed that Abbott did not remove the original south wall of the 1898 structure, but simply built the addition adjacent to it. With the eddition, the assessed value of the structure increased from $2,600 in 1905 to $3,050 in 1906.[120] Further evidence from the 1908 Sanborn map shows that the addition had e loading dock along all three of its outside walls. The eastern wall of the addition was placed away from the 1898 structure to allow for this loading dock.

The roof of the structure was pitched and extended over the southern wall of the addition. The ridge of the roof was lower and its construction different than the roof of the 1898 structure, having shingles nailed to boards rather than lath and shake. Two skylights broke through the north pitch of the roof, although they may have been added later when the packing house was reorganized in 1928. A canopy roof covered the loeding docks on the east end west sides of the addition.[121]

Although the remnents of the Abbott addition ere enclosed within the 1928 extension, it is possible to determine its approximate size. From the different construction materials and techniques involved in each stage of the building's development, pieces of evidence emerge. One of the principal materials which lends itself to interpretation in this manner is the roof structure. The 1928 enlargement was roofed by corrugated iron, contrasting with the shingle roof of the Abbott addition. The approximate perimeter of the Abbott addition can therefore be calculeted by determining the border of the shingle roofing materials. This does not determine the exact dimensions. The removal of the west loading

dock roof during the 1928 enlargement has blurred the border between the 1906 and 1928 additions. The ridge beam of the roof also bears evidence of changes over the years. The ridge beam of the 1928 enlargement was spliced into the end of the 1906 addition beam. This alteration assists in the delineation of the Abbott extension of 1906.[122]

The pattern of the flooring in the 1906 addition was also altered when the new addition of 1928 was constructed. Originally, much of the floor of the packing house was laid with soft pine wood. Later, two-inch-wide hardwood maple floor boards were placed throughout the building in a north-south orientation. The regular pattern of the flooring is disrupted in the vicinity of the roofing material changes. At this point, a single one- inch floor board has been placed at the juncture of the two additions. Apparently, the builders laid the flooring from the west wall towards the east, utilizing a smaller dimension board at the point where the two additions met.[123]

The spacing and location of the columns that now support the roof of the 1906 structure also provide evidence of the addition's size. In the 1928 addition that now forms part of the present building there are six posts and a single post and lintel arch running west to east through the middle of the building. The posts supporting the roof in the 1928 enlargement are 8 X 8 inches in size, and 16 feet apart. The two posts that are located in the 1906 structure are both 6 x 6 inches in size. The post and lintel arch, also in the 1906 addition, replaced a single post so that a sizer could be installed. The spacing between these posts in the 1906 addition, if the original post was positioned in the middle of the space occupied by the arch, would have been 13.5 feet. Taking this spacing, there would have been a 6 X 6 post positioned approximately where the different roofing materials meet. This post, therefore would have marked the south west corner of the 1906 addition. The reason for the post's absence, is that the 1928 structure was built around the 1906 addition, and posts for that structure would have been positioned from west to east, finishing with a post that would support both the 1928 roof and the 1906 roof, making the original post redundant. This is supported by the fact that a tie beam above the new column supports the two roof sections.[124] From this evidence, it can be determined that the 1906 addition was approximately 44 X 51 feet.[125]

The purpose of the addition is not entirely clear, although the evidence points to its use as storage for box making shook.[126] The size of the addition is too small to hold any packing machinery, and the doorway itself, being the only opening to the 1898 structure and the main packing hall, would have made a conveyor system difficult. The addition, however, with its covered loading dock to the Sante Fe railroad siding, would have been ideal for receiving and storing shook. This is consistent with the evidence of the 1908 Sanborn map which labels the south-eastern corner of the 1898 building as "box nailing". The 1906 addition would have stored the shook for the box nailers who worked in the 1898 structure, making boxes by hand using jigs. The use of the addition for fruit storage has been dismissed as the 1898 structure already had adequate loading docks and freight doors.

About the time that Frank E. Abbott built the addition, a motor, valued at $225, was installed along with fixtures valued at $150 and machinery worth $25.[127] This suggests that prior to 1906 the machinery was not powered. The motor installed was most likely an electric motor, and "fixtures" referred to the belts and line shafting used to transmit power from the centralized motor to the individual machines. At this time it was common to have a centralized power unit and use line shafting to transmit the power to the individual machines, following a practice employed with steam and gasoline engines. It is unlikely that a gasoline engine was installed as no mention is made on the 1908 Sanborn insurance map of the storage of any fuel, and many packing houses in the area were already using electric power, which had been available in Riverside since 1888.[128] There is an electric motor and the remnants of line shafting situated today above the pony sizer at the east end of the 1898 structure. This is an old style motor but with built-in variable speed drive probably dating from the 1950s. [129]

The installation of an electric motor and the expansion of the building to store box making shook suggests that production was increasing. The installation of e Stebler Power Sizer, patented only a few years before, would account for such an increase. The Stebler sizer was much more efficient than earlier sizers, and therefore speeded up the packing process. This would require the installation of powered conveyors to feed the sizer through the washing, drying and sorting processes as well as more boxes for packing the fruit. Thus, it is reasonable to essume that a Stebler power sizer with powered conveyor systems was introduced at this time.

This new machinery was placed in the 1898 portion of the structure as the addition was too small. The machinery possibly took the space originally used for shook storage in the 1898 building, thus necessitating the construction of the 1906 addition. It is also possible that Frank E. Abbott built a repeir shop on the southwest corner of his land. A building such as this is shown on the 1908 Sanborn map. A repair shop would have been necessary to service the new equipment which, being built of wood, would suffer from the stress exacted by the power transmission systems. Similar problems occurred in the textile industry in the early nineteenth century which used wood framed spinning, weaving, carding engines.

The building depicted on the Sanborn map is shown linked to the addition by a platform or canopy or both, possibly providing access for handtrucks which would move parts and machinery to the addition. This building and its connection would have made access to the addition for wagons loaded with fruit difficult and strengthens further the case of the addition not being used for receiving or dispatching fruit.

Very little is known of the machinery and its layout within the building between 1906 and 1928. The structure of the building, however, remained the same, with no apparent alteration. Some time in the 1920s an overhead fruit drier was installed. This drier remains in place in the packing house today, although it no longer forms part of the packing process. The electricity power account for the packing house in July 1924 more than tripled and permanently remained at this higher usage average.[130] In that same year the tax assessment increased from $1,600 to $2,130.[131] From this evidence it seems as though there was a modernization of the plant, with new machinery installed. It is feasible at this date that the overhead drier was installed. Jim Simpson, who was packing house foreman until he retired in 1976, believed the drier was installed by the California Iron Works in the early 1920s.[132] This dryer is aligned in an east-west position in the 1898 building and is constructed of wood with nine fans which were driven by a shaft from a centralized electric motor. This dryer would have increased the capacity of the packing house considerably.[133] A Parker Rope and Roll Sizer may well have been introduced at this time, as its greater capacity over the previously installed Stebler sizer would have demended more efficient pre-sizing processing; drying formed part of this process. This hypothesis is consistent with the evidence contained in the National Orange Company Board of Directors minutes which states that in the 1928 modernization "they [the board of directors] installed two new sizers and made e third sizer out of the old one..."[134] By the introduction of this new equipment the National Orange Company pecking house was elevated in terms of technology to that of a "second generation" packing house.

Phase 3.

This next phase, beginning in 1928, brought the packing house essentially to its final form structurally, as well as in the general layout of the packing line, although in both cases minor alterations have been made since. It was in this year that the National Orange Company became part of Sunkist Growers, Inc., and a new board of directors took control of the management of the company.[135] In the lete 1920s, the packing house had been deteriorating and by the time the new management took control, "The house was in e deplorable condition as relates to the working of the machinery and other equipment."[136] Therefore, in 1928 a new extension was completed and new machinery installed.

The 1928 structure was also wood framed and was a double-bay, single- story addition, built around the 1906 eddition. The south wall was a brick firewall built on e concrete foundation. The remaining walls had wood siding, and the east loading dock of the 1906 addition was closed up. The roof was constructed at the same pitch as the 1906 roof, but was covered with corrugated iron. A total of five skylights punctured the northern pitch of this first bay roof, and five more in the northern pitch of the second (southern) bay, creating a north lit shed arrangement typical of second generation packing houses. Two louvered vents were built into this roof, and one on the west end of the northern bay of the extension.

This expansion more than doubled the size of the packing house, providing the needed space for the new machinery. The machinery installed in 1928 included two new Parker Rope and Roll Sizers, which were to be used for sizing the top grade Sunkist fruit, a third sizer built out of the old sizer for handling standard grade fruit, and two new 8-run Electric Fruit Marking machines,[137] installed on each of the two new sizers. The sizers at this time were powered by belts and line shafting running underneath the floor. This shafting, in part, still exists in the packing house today, although the sizers are now powered by individual electric motors. The grading table was rebuilt, but without using any materials from the old tables.[138] The position of the overhead drier dictated the location of the grading table and, therefore, a great deal of the pecking line. The conveyors eround all three sizers were also rebuilt. During this reorganization, a new Parker box-making machine, costing $2,800.00, was installed along with a new lidder end strapper.[139]

The whole pecking house was also reroofed and painted,[140] after which it was ready to pack the 1928-29 crop. Further improvements were also recommended by the manager at this time, in the form of a towel absorber and a direct lift of the fruit from the towel to the drier.[141]

Despite such investment in new machinery in 1928, there was still in operation in 1930 "an old horseshoe treating tank and the incline left from tank to the drier."[142] It was reported in the minutes of the Board of Directors meeting of November 21, 1930, that after some improvement the tank would last another season. These improvements amounted to the repeinting of the tank, which already had two bottoms, and the renewing of the chain on the incline, as well as many of the rollers. These were taken from the "junk heap" in the basement and so the only cost involved was labor. Many other minor improvements were also made in 1930 including the refurbishment of the rollers in the drier.[143] The disbursements for August 1930[144] included the cost of an electric fan from the City of Riverside for $35.00. This purchase may well relate to the fan that is present in the eastern wall of the 1906 addition today. The purchase of this fan was probably connected with the installation of washing equipment and the construction of the concrete sump located beneeth the floor of the 1906 eddition when the loading dock was enclosed during the reorganization of 1928. A "Balance Waxer" machine from the Citrus Machinery Company (CMC) was purchased at some time between October 1931 and May 1932, costing $1,168.07.[145]

After a rain storm had flooded out the basement of the packing house in August 1935, concrete walls were built under the east end west walls.[146] In 1936 the packing house roof was repaired and in May of the same year the firewall was repaired where it had cracked costing $300. A new soeking tank was also purchased in 1936 for $30.[147] In 1937 a frost separator was purchased for $1383.92.[148]

In 1940 there was a proposal to install Brogdex washing equipment. Although not actually installed, the proposal did outline the equipment Brogdex was going to replace or adapt. This machinery included a finger-type trash eliminator from the box dump, a 36" X 4', 2" roll trash eliminator, a CMC[149] type rope-and-roll six-run pony sizer and a four-run Perker washer. Although this equipment

is not specifically mentioned in the minute book of the National Orange Company, it was probably installed when the house was reorganized in 1928.

A "Sweat Room" dating at least from this phase was located in the northeast corner of the 1898 building.[150] Here, the oranges were left to ripen. This explains the now sealed loading door in the north wall, where the fruit would have been brought in from the groves for ripening, probably using ethylene gas before going through the washing and packing process. Although now very much "second generation," the packing house had no pre-cooler of its own; instead, the practice was to store the boxes at the west end of the 1928 extension and hose them down to keep them cool. The fruit was then loaded straight into the refrigerated railroad box cars and these were used as coolers[151]. During the 1930s the line shafting and belting systems were replaced by individual electric motors.[152]

Phase 4.
This phase did not entail any major structural additions or reorganization of the packing line. The house, however was brought up to more modern standards in the 1950s, and slight alterations have been made to the present day in order to keep the house in operation.

In 1956 the present stack elevating dump from the Food Machinery Corporation (FMC) was acquired. It unloaded stacked field boxes and deposited the boxes onto a empty box conveyor for stacking. This enabled an almost constant flow of fruit to the packing line to be achieved. At some time in the 1950s a cull bin was added. This replaced the "sweat room" located in the north east corner of the 1898 structure. Culled fruit rejected from the packing line was brought to this bin by conveyor. The fruit would then be let out at the bottom of the bin onto a conveyor where it was taken out of the building through what used to be a loading door and deposited into a truck to be taken for making juice. Before the installation of the cull bin, the rejected fruit to be used for juice was kept in field boxes in the west part of the building. These boxes were carried and emptied by hand into trucks.[153] With the installation of the cull bin, and the removal of the sweat room, coloring of the fruit was carried out in the west part of the 1898 structure. A ceiling in this area was installed and canvas curtains were drawn around the stacked boxes of fruit while a small amount of ethylene gas was released into the air to speed up the ripening process.

Also in the 1950s, the three Parker rope-and-roll sizers were adapted for "rapid pack". This involved raising the sizers, which are now hung from trusses by steel rods installed between the roof trusses. Extensions were then added to the sides of the sizers so the packers could pack the fruit facing the sizer rather than perpendicular to the sizer as had previously been the case. This arrangement speeded up the packing process by eliminating unnecessary movement.

Another development that took place in the citrus packing industry in the 1950s was the introduction of cardboard cartons. These quite rapidly displaced the use of wooden boxes and made the Parker nailing machines obsolete. In the National Orange Company packing house a Standard Knapp gluer was installed along with a carton sealer. In the small office in the northwest corner of the 1898 structure an air conditioning duct was installed to blow cold air over the packed fruit as it is stacked awaiting shipment.

Further alterations had been made to the house up to the present day. A new corrugated-iron roof was put on in the 1970s and material left over from this work was placed on the walls of the 1928 addition. In 1985 the packing house finally dispensed with the use of field boxes, moving to the now universal 1000 pound wooden boxes. Accommodation for these larger boxes was achieved by cutting away part of the packing house floor in the north end of the building and installing a concrete loading bay so that fork-lift trucks could be used. The stack elevating dump was dispensed with, although it

still remains in the packing house, and a new FMC dumper was installed which tips the boxes on their side to empty them. This machine was located in the northeast part of the building in front of the cull bin, and involved some rearrangement of the conveyor system. The only other new equipment installation in the 1980s was a Brogdex washer and drier. This replaced the existing FMC washing equipment. The remainder of the packing line remains as it was in the 1950s, which in turn is essentially the same as that found when most of the machinery was installed in 1928.

THE MACHINERY AND PACKING PROCESS C. 1956

Unloeding and Coloring

The first stage of the process begins with the unloading of the fruit. The trucks from the groves are brought to the receiving dock on the north side of the building. The field boxes are unloaded by hand truck and taken to the de-greening area where they ere stacked. The canvas curtains are then drawn around the fruit to create an enclosure. Ethylene gas is released from cylinders in concentrations as low as one part per million[164] in order to speed up the ripening process of the fruit. This is achieved within a few days.

Dumping and Sorting

Once ripened, the boxes of fruit are taken by hand truck and loaded six high onto an FMC Traveling Floor Chain Conveyor, which consists of two parellel one-and-a-half inch endless chains set into the floor. The chains are driven by an electric motor. The Traveling Floor Chain Conveyor tekes the stacked field boxes to the FMC Stack Elevating Dump, where the boxes are emptied. This machine empties the boxes by e series of platforms on a continuous belt which pick up the whole stack of boxes, elevating them in a slow continuous movement until rotating arms clamp the top box of the stack and turn it bottom side up. The fruit rolls down a short incline onto a loose fruit conveyor. Meanwhile, the empty field boxes are deposited onto e conveyor, where they are taken off, cleaned and stacked, ready for reloading onto the trucks. The Stack Elevating Dump is powered by a two-horsepower Vari-speed motor and has a capacity of three to twenty boxes per minute.

The loose fruit is taken by a fabric belt conveyor to the FMC Roller Trash Eliminator. This device is a modification of a roller conveyor consisting of a series of rollers in the form of an endless belt that supports the fruit and rotates it as it passes over a trash receiving hopper. This action agitates the fruit end ceuses the refuse (leaves, twigs etc.) to fall between the rollers into the hopper. This machine is operated by a half- horsepower electric motor.

At this point, the fruit can be diverted into the Frost Separator. This device is used to salvage any undamaged fruit after a frost. Basically, the fruit is fed into a tank of water where the damaged fruit, with a low specific gravity, quickly floats to the surface and is caught by a board located across the middle of the tank. Undamaged fruit, which has a greater specific gravity than the frosted fruit, takes longer to float to the surface, and so passes under the divider and is carried out of the tank and back to the processing line by a roller conveyor.

Undamaged fruit passes to the Pre-grading table, where eny rotten or damaged fruit is taken out by hand. Following this operation, the fruit is taken by roller conveyor to the six-run CMC Rope and Roll Pony sizer. This machine eliminates small oranges. It consists of a wood frame which supports six equally spaced polished brass rollers, rotating in a common direction. Six 5/8 inch sizing ropes, interposed between the rollers end traveling parallel to them, convey the fruit through the machine whilst the rolls rotate the fruit in order to find its smallest diameter. The undersize fruit then drops out between the rope and the roller and onto a cull conveyor which takes the fruit to the cull bin for use as juice. The rolls are adjustable so that fruit from one-and-a-quarter to two-and-a-quarter inches in diemeter will drop out. The Pony Sizer is opereted by an electric motor.

Washing, Drying, and Wexing
After the removal of undersize fruit, the remainder of the fruit is taken by a roller conveyor to the soaking tank. This is a 54 inch by 22 foot heated tank containing soapy water to soak the fruit before entering the washer-brusher. A centrifugal pump circulates water around the tank while a traveling submerger, a series of paddles on an endless belt, keeps the fruit below the surface of the water.

The fruit emerges out of the soaking tank on a roller elevator
(e series of wooden rolls forming an endless belt set on an incline) and into a FMC 48 inch wide, 24-brush wesher. The brushes rotete es the fruit passes over them. Once weshed the fruit is taken by another roller elevator to a conveyor set at right angles to the roller elevator. The line now makes its way back parallel with the washing equipment.

The next part of the washing stage is the treating tank. This 54 inch by 19 foot tank contains borax as a treating agent to prevent decay. A traveling submerger moves the fruit through the tank. Once through this part of the process, the fruit passes through a 48 inch, 20-Brass Roll Water eliminator. Here, free moisture is removed by the rotating brass rolls (which have an affinity to water); the water is then removed from the rolls by a scraper. The fruit is now ready to be dried. The fruit is taken up to the dryer by a vertical Loose Fruit Elevator, consisting of galvanized sheet metal baskets carried on heavy endless chains. The baskets, which carry the fruit, are tilted when they reach the top of the elevator, enabling the fruit to gently roll onto a belted conveyor which takes the fruit into the 60 foot long Overhead Drier.

The fruit enters the Overhead Drier from the side. A wooden roll conveyor takes the fruit through the bottom of the drier until it reaches the end, where a conveyor system then takes the fruit out from the drier on its north side, and deposits it back onto the top of the roll conveyor. In this manner the fruit is taken back through the dryer, emerging onto another belt conveyor. Nine fans, powered by a single electric motor through a shaft at 675 RPM, dry the fruit as it passes through the dryer. This dryer can process six car loads of fruit in eight hours and weighs over 11,000 pounds.

Another pony sizer removes any remaining undersize fruit before it enters the dry brusher (this dry brusher was originally a transverse brush waxer, but at this time only brushes the fruit to enable the FMC "Flavorseal" unit to produce a better wax finish). The "Flavorseal" unit, owned and maintained by FMC, applies a very thin surface coating of a porous film to slow down the decomposition and dehydration of the fruit. The "Flavorseal" unit works by gently turning the fruit over and over while the solution is sprayed on. The liquid portion of the spray evaporates leaving the "'Flavorseal' intimately blended with the natural waxes on the skin or peel."[155]

Greding
Once the fruit has left the "Flavorseal" unit, it is ready to be graded. This is carried out at the grading table, where the fruit passes on a conveyor belt in front of six graders who grade the fruit into first grade, choice (second grade), juice grade and rots. The rots are placed on a conveyor and taken to the rot bin. Juice oranges are placed on another conveyor end taken to a roll elevator which carries the juice fruit up to an overhead conveyor and on to the cull bin. A vertical loose fruit elevator takes the fruit up to the top of the bin, where it is deposited.

Choice fruit is placed onto a third conveyor where it is taken to the east sizer for packing and sizing. First grade fruit is left on the conveyor where it passes through one of two eight-run markers from the Electric Fruit Marking Company. These machines mark the fruit, which is "accomplished by e heated die, thermostatically controlled, cerrying on its surface suitable coloring matter which, coming in momentary contact with the fruit, melts the natural wex of the fruit skin, leeving a permanent and legible imprint of the desired trade-mark."[156]

Sizing and Packing

Once marked, the first grade fruit is carried by conveyor to one of the two remaining sizers. All three sizers are Parker Rope end Roll Sizers from the FMC. These sizers consist of a double line of individually adjustable bottle neck rolls and two sizing ropes running parallel to the rolls. The fruit is carried by the rope against the rolls that rotate to find the smallest diameter of the fruit. The size of the rolls diminishes towards the end of the sizer so that when the fruit finds itself unsupported by the rope and roll it drops out into a bin below, where the fruit is packed. The sizing takes place in the narrower cut-out section of each roll (hence the name "bottle neck") so that the fruit drops out into the middle of each bin. Each sizer is powered by an individual two-horsepower electric motor and can process three carloads in eight hours.

For rapid pack operation, the packers face the bins and pack the fruit into boxes or cartons. The fruit is packed high, above the top of the box, to maintain the appeerance of a full box after settling has occurred. The packed boxes or cartons are then placed on a conveyor, where they arrive et the carton diverter. This is a device which allows the heavier wooden boxes to bridge the perpendicular conveyor and move on to the FMC Junior lidding end strapping mechine. This machine nails the lids onto the box end neils a flat steel strap over the center of the lid. It is operated by a one-horsepower electric motor and hes foot lever control. The lid and straps are fed into the machine by hand. The box is ejected automatically. The machine can lid and strep an average of 10 boxes a minute. The lidded boxes descend the FMC steel gravity roll conveyor, where they are taken off and stacked ready for shipment.

The lighter cardboard cartons are not able to bridge the carton divider and are turned onto a perpendicular belt conveyor. The conveyor takes the carton through the lid lifter and then onto the carton gluer. The lid lifter is a simple device consisting of shaped inclined pieces of metal located on either side of the conveyor that raise the lid slightly, so that when the lid is sealed the high packed fruit is not compacted. The Standard Knapp gluer opens up the folded flaps of the carton lid, glues them and then folds them down. The sealer then holds the lid down es the carton travels elong the conveyor while the glue drys. Emerging from the sealer, the cartons turn 180-degrees on a disc-turn and descend the steel gravity roll conveyor, where they ere taken off and stacked. The boxes of fruit are stacked in the west portion of the building before being loaded into waiting refrigerated railroad cars or trucks.

CONCLUSION

The history of the National Orange Company Packing House represents more than the development of the citrus packing house. It is also an important component of an industrial complex; a lineal core of industry along the railroad lines stretching from the downtown area to Arlington Heights. Within this agglomeration of industry, citrus pecking was the prime mover, the stimulus and pool of innovation. The engineering industry of Riverside grew up on the back of citrus production. This industry began as partnerships working out of small workshops manufacturing washing and packing equipment for the growing packing houses, eventually becoming major national corporations whose product range has become so diversified that citrus packing equipment is now but a small part. Attracted by the pool of skills, expertise and the infrastructure already in place, other non-citrus related manufacturing firms centered in Riverside and its environs.

Within this context the National Orenge Company Packing House represents the development of packing house architecture and technology through the first half of this century and the phases of "first and second generetion" packing houses. In the second half of this century the packing house serves as a sanctuary for traditional techniques. Today, the packing house is significant for its continued operation of equipment from the 1920s and 1930s and its hand packing techniques in an age when other houses have moved on to photo electric sizing and packing by robots. The quality of the fruit

packed at the National Orange Company Packing House is second to none. This is not only a reflection of the sound traditional techniques practiced there, but also a reflection of the quality of the fruit from the groves. Thus, in this way the packing house serves as a link in the chain of production between the tree and the table, planting the industry firmly in the realm of mass production for the consumer market, and contributing, in no small way, to the "take off" of Southern California into self-sustained growth and the move to "the age of high mass consumption" of America.[157]

ENDNOTES

1.San Bernardino County Recorder's Office, Map Book 6, p. 48.

2.Riverside County Recorder's Office. Deed Book 61, page 320.

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4.Riverside County Recorder's Office, Deed Book 147, Pg. 256.

5.Riverside Daily Press, "Riverside's Building Boom," 1 October 1898, 5.

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22.Ibid, 55.

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92.In 1901, Fay and Stebler were the only listed competitors to the Wright Brothers. M. E. Peck, comp. Riverside County Directory (no publishing information, 1901), p. 135.

93. Patterson, A Colony For California, p. 263.

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96.Patterson, A Colony for California, p.263.

97.The original idea for the frosted fruit separator came from Chase who, after the big three night freeze in January 1913, experimented with water separation based upon the specific gravity of citrus fruit. The original concept was initially placed in the public domain, but in 1915 Chase assigned his rights to an improvement in the original design to Stebler. Vincent Moses, "A Citrus Monopoly in Riverside 1900-1936," California History LXI (spring 1982), p.33.

29. Moses, "A Citrus Monopoly in Riverside 1900-1936," p.33.

99.Tobey & Wetherell, "The National Orange Co. Packing House," pp. 17-18.

100.In the patent, Stebler calls the machine a "Fruit Grader", an invention which "relates to apparatus for sizing or grading fruit". The terms "grader" and "sizer" at this time seem interchangeable and even the term "Fruit-Separator" was used. The important point is that these machines were used to differentiate the fruit in terms of size. Grading became a separate operation for separating the fruit in terms of quality.

101.Patterson, A Colony For California, p.264

102.Ibid.

103.Tom Patterson, "Machines that made wooden citrus crates," Riverside Press-Enterprise, 22 February 1981, p. B2.

104.Patterson, A Colony For California, p. 266.

105.Tobey and Wetherell, "The National Orange Company Packing House," p. 19.

106.Ibid., p.18.

107.Ibid., p.19.

108.Ibid., p.20.

109.Ibid. pp. 35-43. Tobey and Wetherell have based their findings on a statistical analysis of a sample of 65 packing houses constructed between the years 1912 and 1940.

110.Ibid., p.46.

111.Fruit had to ripen before it could be marketed. This could be done most simply by lengthy cool storage. This, however, was a costly process, but by diffusing a tiny amount of ethylene gas into a specially designed room, a process patented by Frank E. Denny of Los Angeles in 1923 (No. 1,475,938), the time taken for the fruit to ripen could be reduced to a few days. These ripening rooms were known as "sweat rooms", "curing rooms," "coloring rooms," and "de-greening rooms".

112.Kahn was a German immigrant to the United States who became an architect specializing in concrete construction. Boorstin, The Americans, p. 550.

113.Riverside Daily Press, 23 December 1898, p.2.

114.Riverside Press and Horticulturist, 21 January 1899, p.3.

115.The "tangent fruit brusher." Shamel, "Citrus Washing-Brushing Machines Used by Pioneer Growers," California Citrograph, June 1932, p.319.

116.Most other packing houses installed only two.

117.Riverside Press and Horticulturist, Saturday January 21 1899, p.3.

118.R. Tobey, "The National Orange Company Packing House: Part 1, Architectural History," (draft manuscript, Department of History, University of California, Riverside, 1991), p. 9.

119.Insurance Maps of Riverside including Arlington, Casa Blanca and High Grove, California (New York: Sanborn Map Company, 1908).

120.Tobey, "The National Orange Company Packing House: Part 1, Architectural History." p.5.

121.This evidence was gained from the observations of Tobey in his "The national Orange Company Packing House: Part 1, Architectural History," as well as personal inspection of the packing house by the author.

122.Ibid.

123.Ibid.

124.Ibid.

125.This is evidence that Tobey also considers in his "The National Orange Company Packing House; Part 1, Architectural History."

126.Wooden slats used to make up the boxes.

127.Tobey states in his "National Orange Company Packing House: Part 1, Architectural History" that prior to 1906 there was no motor listed on the tax rolls, but in november 1906 a motor and fixtures appeared for the first time along with machinery valued at $225 which was $25 more than the last

valuation in 1901.

128. The Highgrove hydroelectric plant on the Warm Creek canal of the Riverside Water Company lit the first arc lamp in front of Wieck's Drug store in Riverside in the spring of 1888. Highgrove: Southern California's Pioneer Hydroelectric Power Plant, (A pamphlet published by the Southern California Edison Company, undated), p. 2.

129.Frank Thornton, personal communication, 1991. Mr. Thornton is a retired engineer for Sunkist Growers, Inc. During his career he was responsible for designing several packing lines for Sunkist packing houses.

130.Tobey, "The National Orange Company Packing House: Part 1, Architectural history." p. 10.

131.Ibid.

132.Tom Patterson, "Riverside's oldest packing house has some old and some new ways,"Riverside Press-Enterprise, 10 June 1979, p. B2.

133.This overhead drier had a capacity of six carloads in en eight hour day. Food Machinery Corporation Catalog R - 100, undated, p.26. In the private collection of Frank Thornton.

134.National Orange Company. Minutes of Meetings of the Board of Directors, 1919-1941, meeting of 7 December 1928. On file at the National Orange Company Packing House office.

135.Ibid.

136.Ibid.

137.These two machines cost $4200 and were delivered from the manufacturers, the Electric Fruit Marking Co. on November 15, 1928. Letter to the National Orange Co. from the Electric Fruit Marking Co., October 11 1928. On file at the Riverside Municipal Museum, Historic Resources Department.

138.National Orange Company, Minutes, 7 December 1928.

139.Ibid.; Ibid., 7 September 1928.

140.A contract was let to the Fred. S. Wilber Pioneer Roofing Company, at a cost of $900.00 for the reroofing of the packing house. National Orange Company, Minutes, 7 September 1928.

141.National Orenge Company, Minutes, 7 December 1928.

142.Ibid., 21 November 1930.

143.Ibid.

144.Ibid., August 1930.

145.In October 1931, Mr. Funk, the packing house manager, was authorized to purchase a waxing machine from CMC at a cost of no more than $1500.00. National Orange Company, Minutes, 16 October 1931. The Disbursements for the month of May 1932 included $1,168.07 for a Balence Waxer from CMC.

146.National Orange Company, Minutes, 31 August 1935; Ibid., 21 October 1935.

147.Ibid., 16 March; Ibid., 18 May; Ibid., 17 August 1936.

148.Ibid., "Trail Balance Figures", 1937.

149.The Citrus Machinery Company, a division of the Food Machinery Corporation.

150.Robert Renfro, personal communication, 17 July 1991. Mr Renfro is a retired National Orange Company Manager.

151.Ibid.

152.Ibid.

153.Ibid.

154.The inventor of the process, Frank E. Denny, states in his patent (No. 1,475,938) that ethylene, "brings about the change [in the fruit color] when used in concentration as low as one part per million, and for practical purposes, the maximum concentration permissible seems to be one part in five thousand."

155.Food Machinery Corporation Catalogue, 1946. p. C4. On file at the Riverside Municipal Museum, Historic Resources Department.

156.Citrus Machinery Company, Catalog R-102, undated. p.41. In the private collection of Frank Thornton.

157.W. W. Rostow uses the analogy of a plane taking off to describe the economic development of countries from a traditional pre-industrial state to a modern capitalist society. In this model, he identifies five stages: The traditional society; the pre-conditions for take-off; the take-off; the drive to maturity; the age of high mass consumption. W. W. Rostow, The Stages of Economic Growth: A Non-communist Manifesto (Cambridge: Cambridge University Press, 1990).

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ADDENDUM TO
NATIONAL ORANGE COMPANY PACKING HOUSE
(ANDERSON, WOTTON & GODFREY PACKING HOUSE)
California Citrus Heritage Recording Project
3604 Commerce Street
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California

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